

**COMPENSATING FOR LEAKAGE CURRENTS IN
LOOP FILTER CAPACITORS IN PLLs AND THE LIKE**

ABSTRACT OF THE DISCLOSURE

5 Circuitry compensates for adverse effects resulting from leakage currents in loop filter capacitors for signal synthesizers, like PLLs. In one technique, leakage current in the loop filter's damping capacitor is compensated by driving the voltage across a matching capacitor and generating current for the damping capacitor based on current applied to the matching capacitor. In another technique, leakage current in the loop filter's transconductor capacitor is compensated by digitally accumulating differences between the damping capacitor voltage and a reference voltage, and then converting the accumulated difference into a (voltage or current) signal applied to the transconductor capacitor. In addition, the loop filter could have an analog transconductor path that generates a signal that is also applied to the transconductance capacitor. By effectively compensating for capacitor leakage currents, signal synthesizers of the present invention can be implemented using capacitors having thinner oxide gates,
10 thereby reducing the size of the capacitors.
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